



# County of Roanoke

## DEPARTMENT OF COMMUNITY DEVELOPMENT

DIRECTOR, ARNOLD COVEY  
DEPUTY DIRECTOR OF DEVELOPMENT SERVICES, TAREK MONEIR  
DEPUTY DIRECTOR OF PLANNING, PHILIP THOMPSON

BUILDING PERMITS/ INSPECTIONS  
DEVELOPMENT REVIEW  
ENGINEERING  
ENVIRONMENTAL MANAGEMENT  
PLANNING & ZONING  
TRANSPORTATION

## Memorandum

To: Thomas Gates, County Administrator  
From: Butch Workman, CRS Coordinator  
Subject: Status of Plan Implementation (Regional Pre-Disaster Mitigation Plan)  
Date: October 28, 2016

The National Flood Insurance Program (NFIP's) Community Rating System (CRS) is a voluntary incentive program that recognizes communities for implementing floodplain management practices that exceed the Federal minimum requirements of the NFIP to provide protection from flooding. In exchange, policy holders receive reduced flood insurance premiums for buildings located in Roanoke County. By participating, Roanoke County earns credit points that determines classification. Currently, Roanoke County property owners receive a 10 percent reduction in flood insurance premiums. Since 1991, Roanoke County floodplain property owners have received reduced flood insurance premiums.

Resolution 070814-5.b, July 8, 2014, The Board of Supervisors adopted the Regional Pre-Disaster Mitigation Plan. For credit under CRS, the County must continue monitoring implementation of the Plan and prepare a written progress to the Board. In addition, a progress report must be distributed to the media and made available to the public.

### **ROANOKE COUNTY MITIGATION GOALS and STRATEGIES**

#### **BACKGROUND**

In developing mitigation strategies and goals, a wide range of activities were considered in order to achieve goals and to lessen impact of natural hazards. Roanoke County staff from Emergency Services and Community Development prioritized each of the goals and strategies presented in the Plan. Prioritization was completed in order of relative priority – high, medium or low- based on the benefit to cost criteria and the strategy's potential to mitigate the impact from natural hazards. Consideration was given to available funding, and Roanoke County's ability to make sure each project or action would be implemented. In addition, proposed projects cost effectiveness of each measure and investment of public funds to reduce future damages were considered.

## **ROANOKE COUNTY HAZARD MITIGATION PROJECTS**

### **EARTHQUAKE**

Goal: Increase public awareness of the probability and potential impact of earthquakes.

Responsible Department(s): Engineering, Public Information, Emergency Services

Strategies:

1. Publish in a special section in local newspaper with emergency information on earthquakes. Localize the information by printing the phone numbers of local emergency services offices, the American Red Cross, and hospitals. **STATUS:** (Ongoing) The County uses Social Media sites to promote all types of Emergency Preparedness information and sponsors drills within schools.

### **FLOOD**

Goal: Mitigation of loss of life and property from flooding and flood related disasters.

Responsibility Department(s): Community Development, Emergency Services

Strategies:

1. Support a comprehensive, regional public information and education program on flooding, living in the floodplain, flood risk, low cost simple flood mitigation measures, flood insurance information, stream remediation, hydrology, floodplain ordinances, and NFIP. This can be accomplished through regional workshops and educational materials for citizens, business, local staff, and elected officials.

**Status:** (Ongoing) The annual letter to floodplain residents, and flood protection references are maintained at both library and County Administration Center. Continue the public information activities credited by the Community Rating System. Stream restoration projects are currently under way in Glade Creek and a tributary of Cook Creek. Recently, Murray Run stream restoration was completed.

2. Develop and maintain an inventory of flood prone roadways in cooperation with local governments and the Virginia Department of Transportation. **Status:** (Ongoing)
3. Develop and maintain an inventory of flood prone critical regional facilities such as hospitals, public utility sites, airports etc. **Status:** Roanoke County's public service center is located in Flood Zone AE. The County is in the process of studying options for this facility and will be formulating a plan for future capital improvements. Regional critical facilities are known by all emergency personnel.
4. Maintain an inventory of flood prone residential properties and repetitive loss properties. **Status:** (Ongoing)
5. Develop and maintain damage assessment information. **Status:** (Not started)
6. Continue the acquisition of elevation certificates for flood prone properties. **Status:** (Ongoing) The County has acquired over 30 this year and is available on GIS.
7. Continue the flood proofing/acquisition of flood prone properties followed by the appropriate mitigation measures. **Status:** Delayed budgetary restraints

8. Revise stormwater management and floodplain management ordinance. **Status:** All up-dates completed by April 2017.

9. Participate in, and remain in good standing with, the National Flood Insurance Program (NFIP) by enforcing floodplain management regulations that meet federal requirements. **Status:** (Ongoing)

Goal: Update existing GIS data layers related to natural hazards.

Responsible Department(s): Engineering

Strategies:

1. Consider seeking funding and support programs that update FEMA's Flood Insurance Rate Maps (FIRM). Continue participation in FEMA's Cooperating Technical Partners (CTP) program that establishes partners with jurisdictions to develop and maintain up-to-date flood maps.

**Status:** (Ongoing)

2. Utilize GIS to inventory at risk infrastructures and public and private structures within flood prone areas. **Status:** (Ongoing)

3. Continue participating in FEMA's Digital Flood Insurance Rate Maps (DFIRM) program. **Status:** (Ongoing)

4. Support FIRM remapping projects that address areas in the region that have the most serious mapping problems and where flooding is a repetitive problem. **Status:** (Ongoing) The County is in the process of obtaining LIDAR.

Goal: Provide early warning of flooding.

Responsible Department(s): Engineering, Emergency Services

Strategies:

1. Identify areas with recurring flood problems and request additional IFLOW stream/rain gauges as appropriate to ensure that these areas are adequately covered and monitored.

**Status:** Not started lack of funding.

2. Consider a reverse 911 early warning system. **Status:** Completed

3. Consider on-site notification of flood prone properties. **Status:** (Ongoing)

Goal: Identification of structural projects that could mitigate the impact of flooding.

Responsible Department(s): Engineering

Strategies:

1. Consider seeking funding to prepare site specific hydrologic and hydraulic studies that look at areas that have chronic and repetitive flooding problems. **Status:** (Ongoing)

2. Support Virginia Department of Transportation (VDOT) projects that call for improved ditching, replacement of inadequate and undersized culverts, enlargements of bridge openings and drainage piping needed to minimize flooding. **Status:** VDOT and the County work on resolving flood issues through the Revenue Sharing and County Drainage Maintenance program. Projects to correct localized flooding were completed, in Penn Forest, Farmington Dr., Back Creek Rd., Bradshaw Rd., Starkey Rd., Texas Hollow Rd., Old Mill Rd., and Rocky Rd. The

County's Drainage Maintenance program is responsible for maintaining public drainage easements. Large and small scale projects are routinely approved by the Board of Supervisors. See Exhibit A for a list of completed projects.

3. Update the Roanoke Valley Regional Stormwater Master Plan. **Status:** (No Funding)
4. Expand the number of watersheds studied in the master plan and develop watershed plans for each. **Status:** (No Funding)

Goal: Maintain an accurate data base and map of repetitive loss properties

Responsible Department(s): Engineering

Strategies:

1. Work with VDEM and FEMA to update list of repetitive loss properties annually. **Status:** (Ongoing)
2. Review property addresses for accuracy and make necessary corrections. **Status:** (Ongoing)
3. Determine if and by what means each property has been mitigated. **Status:** (Ongoing)
4. Map properties to show general site locations (not parcel specific in order to maintain anonymity of the property owners). **Status:** (Ongoing)
5. Determine if properties have been mitigated and inform FEMA/VDEM through submission of an updated list/data base and mapping. **Status:** (Ongoing)

## **HURRICANE**

Goal: Mitigate the impact of hurricanes.

Responsible Department(s): Emergency Services

Strategy:

1. Research and consider participating in the National Weather Service "Storm Ready" program. **Status:** (Pending Application 2016)

## **LANDSLIDE**

Goal: Improved Hazard Mapping and Assessments for landslides.

Responsible Department(s): Engineering

Strategies:

1. Delineating susceptible areas and different types of landslide hazards at a scale useful for planning and decision-making, led by USGS and State geological surveys. **Status:** (Not pursued see note 3)
2. Work with state and Federal agencies to develop data that will assist in reducing and eliminating impacts from landslides. **Status:** (Not pursued see note 3)
3. Develop steep slope ordinance/guidelines for development in steep slope/marginal soils areas. **Status:** (Steep Slope Ordinance # 082206-3, adopted 8/22/06 guidelines and requirements appears to be sufficient). No further actions are warranted.

## **TORNADO**

Goal: Mitigation of the impact of tornados.

Responsible Department(s): Emergency Services

Strategy:

1. Conduct a series of public workshops about how to protect yourself during a tornado in case you are at home, in a car, at the office, or outside. **Status:** (Ongoing) The County uses Social Media sites to promote all types of Emergency Preparedness information and sponsors drills within schools

## **WILDFIRE**

Goal: Mitigation of the impacts of wildfire to life and property.

Responsible Department(s): Emergency Services

Strategies:

1. Encourage residents and developers to use Firewise building design, siting, and materials for construction. **Status:** (Not Started Lack of Funding)
2. Conduct community wildfire assessment in cooperation with VDOF staff using the Wildland Urban Interface Fire Protection Program's Woodland Community Wildfire Hazard Assessment form. **Status:** (Not started lack of funding)
3. Identify buildings or locations vital to the emergency response effort and buildings or locations that, if damaged, would create secondary disasters in forested areas. **Status:** (Not started lack of funding)

## **WINTER STORMS**

Goal: Mitigate the effects of extreme weather by implementing programs that provide early warning and preparation.

Responsible Department(s): Emergency Services

Strategy:

1. Research and consider participating in the National Weather Service "Storm Ready" program. **Status:** (Application Pending 2016)
2. Participate in special statewide outreach/awareness activities, such as Winter Weather Awareness Week, Flood Awareness Week, etc. **Status:** (Ongoing)

**EXHIBIT A**

**3 - BOARD APPROVED PROJECTS**

Project Location	Magisterial District	Crew	Properties Improved	Description	Completed	Duration (Days)	Length of Pipe (ft)	Open Channel / Rip-Rap (ft)	Total Restoration Area (SF)
3804 Meadowlark Dr. (P-24)	Cave Spring	C/F	4	Installed 670' of 54" Concrete pipe/ 6 structures / 170' of rip-rap	11/3/15	250	670	12	20
6098 Sleepychase Dr. (P-253)	Cave Spring	R	2	Installed rip-rap and grass swale	8/31/15	N/A	N/A	5	15
5316 Summer Dr. (P-334)	Hollins	F	3	Installed manhole, replaced pipe and installed rip-rap	7/31/15	58	547	3	12
6453 Fairway Estates Dr. (P-253)	Windsor Hills	R	4	Installed class 2 rip-rap at end of concrete flume	09/17/15	4	N/A	.5	40
5556 Westbirch Ct. (P-310)	Windsor Hills	R	1	Added rip-rap to channel and removed debris off D-7 grade	10/7/15	3	N/A	4	35
3777 Hummingbird Ln. (P-330)	Cave Spring	C/F	4	Installed 215' of 54" concrete pipe/ curb insets/ rip-rap and concrete channel	6/8/16	90	219	10	72

**Fiscal Year 15 - 16**

**1 - BOARD APPROVED PROJECTS (In-Work)**

Project Location	Magisterial District	Crew	Properties Improved	Description	Status / Days	Length of Pipe	Open Channel / Rip-Rap (ft)	Total Restoration Area (SF)
5806 Huntridge Rd. (P-304)	Hollins	R	8	Stabilize drainage channel with natural rock structures and grass swale and pipe	In-work	85	80	18,950

**Fiscal Year 15 - 16**

**ADDITIONAL PROJECTS (took more than a week to complete)**

Project Location	Magisterial District	Crew	Properties Improved	Description	Completed	Duration (Days)	Length of Pipe	Open Channel / Rip-Rap (ft)	Total Restoration Area (SF)

**Fiscal Year 15 - 16**

**12 - SMALL PROJECTS (took less than a week to complete)**

Project Location	Magisterial District	Crew	Properties Improved	Description	Completed	Duration (Days)	Length of Pipe	Open Channel / Rip-Rap (ft)	Total Restoration Area (SF)
7182 Bent Ml. Rd.	Windsor Hills	F	2	Reworked rip-rap channel	2/2/16	1	N/A	2	4
6006 Windcrest	Hollins	R	2	Added rip-rap to channel to help protect property and fence	7/14/15	1	N/A	5	12
6155 Sleepychase Dr.	Cave Spring	R	1	Added rip-rap to channel to help protect property	8/3/15	1	N/A	2	6
6155 Sleepychase Dr.	Cave Spring	R	1	Repaired 20' section of drainage channel that washed out	9/3/15	2	N/A	2	20
Dixie Caverns Police Firing Range	Caverns	R	1	Pumped water out of leachate pond for inspection by consultants	9/8/15	1			
3424 Ashmeade Dr.	Cave Spring	F	1	Located and dug up storm manhole so surveyors could put on plans	10/27/15	1			10
3409 Cedarmeade Rd.	Vinton	R	1	Hand dug about 20' of channel to help eliminate standing water	03/09/16	1			
Dixie Caverns Police Firing Range	Caverns	F	1	Fixed issues that was listed on the CHA inspection report	02/28/16	1			
IVHS Regional Storm Water Pond	Cave Spring	F	1	Installed class 1 rip-rap berm between outfall of pipes and creek	03/20/16	2	N/A	2	50
3021 Penn Forest Blvd.	Cave Spring	F	1	Installed berm at end of cul-de-sac to prevent house from flooding	05/04/16	1			175
8116 Hunter's Trail	Hollins	F	1	Removed tree and installed rip-rap in channel where it is eroding	05/09/16	2		8	350
5353 Crystal Springs Rd.	Cave Spring	F	1	Cut up and removed trees that had fallen in creek	05/16/16	1		16	30

### Fiscal Year 15 - 16

### 17 - ROUTINE / REPETITIVE MAINTENANCE

Project Location	Magisterial District	Crew	Properties Improved	Description	Completed	Duration (Days)	Length of Pipe	Open Channel / Rip-Rap (ft)	Total Restoration Area (SF)
HVHS Regional Storm Water Pond	Windsor Hills	R	1	Cleaned off trash rack in Regional Storm Water Pond	08/07/15	1			
HVHS Regional Storm Water Pond W. River Rd.	Windsor Hills	R	1	Cleaned off trash rack in Regional Storm Water Pond	08/19/15	1			
HVHS Regional Storm Water Pond Catawba	Windsor Hills	R	2	Moved county o/s	09/23/15	1			
HVHS Regional Storm Water Pond Windsor Hills	Windsor Hills	R	1	Moved and cleaned off trash rack in Regional Storm Water Pond	09/24/15	1			
HVHS Regional Storm Water Pond Windsor Hills	Windsor Hills	R	1	Cleared debris blocking forebay and pipes under walking trail	10/07/15	1			
HVHS Regional Storm Water Pond Windsor Hills	Windsor Hills	R	1	Cleaned off trash rack in Regional Storm Water Pond	10/08/15	1			
HVHS Regional Storm Water Pond Windsor Hills	Windsor Hills	F	1	Cut tree off the dam in Regional Storm Water Pond	11/04/15	4			
HVHS Regional Storm Water Pond Windsor Hills	Windsor Hills	F	1	Cleaned off trash rack in Regional Storm Water Pond	12/08/15	1			
HVHS Regional Storm Water Pond Windsor Hills	Windsor Hills	F	1	Cleaned off trash rack in Regional Storm Water Pond	02/08/16	1			
HVHS Regional Storm Water Pond 3881 Vaughn Rd.	Windsor Hills	F	1	Removed 375 tons of sediment out of pond and forebay. Removed 5 loads of debris	03/16/16	5			
5571 Ambassador Dr.	Catawba	F	1	Removed silt out of channel and reseeded	04/13/16	1			
HVHS Regional Storm Water Pond Windsor Hills	Windsor Hills	F	2	Removed silt out of channel, graded and reseeded	04/18/16	2			
HVHS Regional Storm Water Pond Windsor Hills	Windsor Hills	F	1	Moved grass in bottom of pond but too wet to mow the dam	04/26/16	1			
2964 Stonebridge Cir. W. River Rd.	Vinton	F	1	Cut down and removed dead trees out of the pond (4 tandem loads)	04/29/16	3			500
HVHS Regional Storm Water Pond	Catawba..	R	2	Removed 25 tons of silt out of concrete channel	05/23/16	2			
	Windsor Hills	F	1	Mowed county lots	06/22/16	1			
	Windsor Hills	F	1	Mowed grass in bottom of pond but too wet to mow the dam	06/29/16	1			

### Fiscal Year 15 - 16

### 22- EMERGENCY / HIGH PRIORITY PROJECTS

Project Location	Magisterial District	Crew	Properties Improved	Description	Completed	Duration (Days)	Length of Pipe	Open Channel / Rip-Rap (ft)	Total Restoration Area (SF)
929 Feltwick Dr.	Hollins	F/R	2	Pumped water during heavy rains to prevent houses from flooding	7/14/15	1			
309 Vista Ave.	Hollins	F	1	Removed tree out of creek	7/14/15	1			275
982 Barnes Rd.	Hollins	F	1	Filled in sink hole beside Di-7	7/31/15	1			
6021 Brahma Rd.	Windsor Hills	R	2	Repainted Di manhole and filled in sinkhole	9/1/15	2			
3714 Buckingham Cir.	Windsor Hills	R	2	Removed 960 lbs of debris out of manhole and cleared debris off Di-7 grate.	9/30/15	1			
3021 Penn Forest Blvd.	Cave Spring	F/R	1	Took 55 sandbags to prevent water from flooding the house	10/1/15	1			
2926 Diplomat Dr.	Catawba..	R	1	Took sandbags to prevent water from flooding the house	10/21/15	0.5			
5628 Ambassador Dr.	Catawba..	R	1	Replaced Di-7 grate that someone had dropped into the manhole	10/23/15	32			
5215 North Lakes Dr.	Catawba..	F	2	Replaced collapsed storm drain pipe under driveway and installed rip-rap at both ends	11/10/15	1			8,874
5326 Cave Spring Ln	Cave Spring	F	1	Removed debris blocking pipe.	11/12/15	1			
5833 Chegall Cr.	Cave Spring	F	1	Filled in sink hole behind house	11/17/15	1			300
3026 Pebble Dr.	Vinton	F	1	Filled in sink hole behind house	02/02/16	1			255
3007 Greenridge Rd.	Catawba..	R	1	Filled in sinkhole beside Di-7	02/29/16	1			200
3041 Merino Dr.	Windsor Hills	F	1	Filled in sink hole in back yard	03/01/16	1			
6232 Merriman Rd.	Cave Spring	R	2	Removed tree that fell across drainage channel	03/10/16	1			
3026 Pebble Dr.	Vinton	F	1	Filled in another sink hole behind house.	4/6/16	0.5			200
2907 Embassy Dr.	Catawba..	F	1	Replaced Di-7 grate that someone had dropped into the manhole	04/27/16	1			
6443 Fairway Estates Dr.	Windsor Hills	F	1	Removed tree that fell across drainage channel	05/11/16	1			
929 Feltwick Dr.	Hollins	F/R	2	Pumped water during heavy rains to prevent houses from flooding	05/19/16	1			100
441 Missmer Ln.	Vinton	R	1	Filled in sink hole in back yard	05/20/16	1			
5509 Taney Dr.	Catawba..	F	2	Removed debris blocking flow of creek and dropped off sandbags for homeowner	06/21/16	3			
5548 Highfields Rd.	Cave Spring	F	2	Performed restoration on yards after VDOT installed pipe across the road	06/21/16	3			1200

**Fiscal Year 15 - 16**
**8 - INTER-DEPARTMENTAL PROJECTS**

Project Location	Department	Crew	Properties Improved	Description	Completed	Duration (Days)	Length of Pipe	Open Channel / Rip-Rap (ft)	Total Restoration Area (SF)
7206 Kessler Mill Rd	General Services	R	1	Graded parking lot around wash bay		9/9/2015	1		
Poor Mt. Rd.	Communications	F	1	Graded access road to Communications radio towers		11/16/2015	2		
12 O'clock Knob Rd.	Communications	F	1	Graded access road to Communications radio towers		11/17/2015	2		
911 Building, Garage, Fire Dept....	Parks & Rec	R/F	4	Removed snow from sidewalks and parking lots at four designated locations		01/25/16	4		
O Barteby Dr.	Economic Dev.	F	1	Cleared blackage out of creek		02/11/16	4		
911 Building, Garage, Fire Dept....	Parks & Rec	R/F	4	Removed snow from sidewalks and parking lots at four designated locations		02/11/16	5		
Fort Lewis Access Road	Communications	F	1	Graded access road to Communications radio towers		03/03/16	3		
Dixie Caverns Police Firing Range	Police	F	1	Removed 20 tons of debris that fell off bank onto road going up to training building		06/15/16	1		

PROJECT CATEGORY	DAY(S)	MAN HOURS
Board Approved Projects	520	14,560
Additional Drainage Projects	0	0
Small Projects	15	420
Routine Projects	28	784
Emergency / High Priority Projects	11.5	322
Inter-Departmental Projects	17	476
<b>Total Properties Improved</b>	<b>95</b>	
<b>Total Ft. of Pipe Installed (LF)</b>		<b>1686</b>
<b>Total Ft. of Open / Rip-Rap Channel (LF)</b>		<b>864</b>
<b>Total Restoration Area (SF)</b>		<b>121,059</b>

# FLOODPLAIN MANAGEMENT PLAN

## ANNUAL PROGRESS REPORT

### 1. ROANOKE VALLEY REGIONAL MANAGEMENT PLAN

- Completed October 1997
- Adopted By The Board Of Supervisors 1998

### 2. PETERS CREEK STORMWATER MANAGEMENT FACILITY

- Construction Completed July 1999
- Map Revision Panel No. 23 Effective Date 2/04/2005
- Catawba Magisterial District

### 3. CARVINS CREEK HAZARD MITIGATION PROJECT PHASE I

- Acquisition/Relocation of Eight Repetitive Loss Homes  
Completed 9/00
- Hollins Magisterial District

### 4. CARVINS CREEK HAZARD MITIGATION PROJECT PHASE II

- Acquisition/ Relocation of Five Repetitive Loss Homes  
Completed 10/02
- Hollins Magisterial District

### 5. WEST ROANOKE RIVER FLOOD MITIGATION PHASE I

- Acquisition/Relocation of Three Repetitive Loss Homes  
Completed 10/02
- Catawba Magisterial District

### 6. OPEN SPACE PRESERVATION

- County Purchased Eighteen Acres of Floodplain Property for  
the Expansion of Starkey Park. Completed 6/00
- Cave Spring Magisterial District
- County Purchased Five Acres of Floodplain Property Adjacent  
to Carvins Creek Phase II
- Hollins Magisterial District

7. PROJECT IMPACT COMMUNITY

- Elevation Certificates for Flood Prone Properties. Completed 9/03
- All Magisterial Districts

8. MUDLICK CREEK STORMWATER MANAGEMENT FACILITY

- Designed to Enhance Water Quality and Reductions in Peak Flows. Completed 8/01
- Additional Modifications Planned to Further Reduce Peak Flows. Modifications planned and FEMA Map Revision 08
- Windsor Hills Magisterial District

9. INTERNET FLOODPLAIN DETERMINATION

- Elevation Certificates Available on Internet

10. COOPERATING TECHNICAL PARTNER

- Federal Emergency Management Agency Cooperating Technical Partner. (CTP Community 6/21/04)

11. HAZARD MITIGATION PLAN

- Adopted by The Board Of Supervisors 05

12. FLOODHAZARD MAPPING MODERNIZATION

- Base Flood Studies Completed on Bradshaw and Mason Creek 5/06
- Catawba Magisterial District
- Redelineated Flood Maps Based on Terrain Data County Wide. Will Result in Increased Accuracy. Completed 5/06
- Adoption of New Flood Maps September 07

13. WEST ROANOKE RIVER FLOOD MITIGATION PHASE II

- Acquisition of Two Repetitive Loss Homes FEMA/State Obligated Funds July 5, 2007. Completed June 30, 2009. Catawba Magisterial District
- Repetitive Loss (RL) Updates Sent to FEMA Nov. 2010

14. BACK CREEK FLOOD MITIGATION PHASE 1

- Acquisition of a flood prone property adjacent to Starkey Park, 5755 Crystal Creek. This acquisition and demolition was financed entirely by Roanoke County. Cave Spring Magisterial District (April 2011) Open Space Preservation

15. MUDLICK CREEK MAP REVISION (PANEL NO. 51161CO232G)

- Roanoke County is in the process of updating a large portion of this panel. (August 2012 start, Delayed due to planned improvements Farmington Dr.) Improvements completed will begin FIRM revision 2017

16. VIRGINIA DEPARTMENT OF TRANSPORTATION MCVITTY ROAD IMPROVEMENTS BETWEEN OLD CAVE SPRING AND ELECTRIC RD. (PANEL NO. 51161C0232G)

- Demolition of seven flood prone residential properties, Windsor Hills Magisterial District (2011)

17. BACK CREEK MAP REVISION (PANEL NO. 5116C0254G)

- Map Revision Completed, January 2014, Cave Spring Magisterial District

18. REGIONAL PRE – DISASTER MITIGATION PLAN

- Adopted July 8, 2014

19. MASONS CREEK MAP REVISION (LOMR) PANEL NO. 51161c0133G, LOW WATER BRIDGE AT HANGING ROCK GREENWAY

- Effective Date Dec. 2, 2016

## Roanoke County Hazard Mitigation Projects

Project	Hazard Mitigated	Benefit	Cost	Benefit-to-Cost	Priority	Funding Partners	Implementation/Lead Agency	Status	Proposed Schedule
Publish a special section in local newspaper with emergency information on earthquakes	Earthquake	Increased level of knowledge and awareness in citizens	\$2,500	High	Low	FEMA, VDEM	Local government	ONGOING SEE NOTE 1	ONGOING
Research and consider participating in the National Weather Service “Storm Ready” program	All Hazards	Community will be better prepared through planning and education about hazards	\$2,000	Medium	Medium	NWS	Local government	PENDING	2016
Public education workshops for tornado drills (public, businesses and schools)	Tornado	Public informed about how to protect yourself during a tornado in case you are at home, in a car, at the office, or outside	\$5,000	High	Medium	Local government	Local government	ONGOING SEE NOTE 1	ONGOING
Participate in, and remain in good standing with, the National Flood Insurance Program (NFIP)	Flooding	Reduction of future flood damage through enforcement of floodplain ordinances and availability of discounted flood insurance for property owners	Unknown	CRS	High	FEMA	Local government	Ongoing	Ongoing
Maintain an accurate database and map of repetitive loss properties	Flooding	Identification of repetitive loss properties that should be mitigated	Unknown	CRS	High	FEMA, VDEM	Local government	Ongoing	Ongoing
Develop and maintain an inventory of flood prone roadways	Flooding	Inventory of flood prone roadways for planning purposes (road improvements, limitation of development)	\$25,000	Medium	Medium	FEMA, VDEM, RVARC, VDOT, Local government	RVARC	In progress	Ongoing updates

**NOTE:**  
 1. The County uses Social Media and practice drills in Public Schools.

Project	Hazard Mitigated	Benefit	Cost	Benefit-to-Cost	Priority	Funding Partners	Implementation/Lead Agency	Status	Proposed Schedule
Upgrade/repairs to stormwater system	Flooding	Reduce frequency and impact of flooding	\$10,000,000	High	High	FEMA, VDEM, VDOT	Local government, Engineering Dept.	Ongoing	Ongoing
Drainage system maintenance	Flooding	Clear debris and repair banks to prevent backup, erosion and flooding of existing drainage systems	\$1,000,000 annually	High	High	FEMA, VDEM, VDOT	Local government, Engineering Dept.	Ongoing	Ongoing
Update Regional Stormwater Management Master Plan	Flooding	Watershed/mitigation planning and project identification	\$750,000	High	High	FEMA, Local government, PDC	Local government, Engineering Dept.	Ongoing	Ongoing
Encourage residents and developers to use Fire-Wise building design, siting, and materials for construction	Wildfire	Reduction in damages from wildfire	\$5,000	High	Medium	VA Dept. of Forestry, Local government	Local government	Not started; lack of funding	
Community wildfire assessments	Wildfire	Reduction of loss to wildfire	\$25,000	N/A	Medium	VA Dept. of Forestry, Local government	VA Dept. of Forestry, Local government	Not started; lack of funding	
Identify buildings or locations vital to the emergency response effort and buildings or locations that, if damaged, would create secondary disasters in forested areas	Wildfire	Available inventory of structures that need additional or unique protection from wildfires.	\$10,000	Medium	Medium	VA Dept. of Forestry, US Forest Service, Local governments	Local government, VDOF, USFS	Not started; lack of funding	

Project	Hazard Mitigated	Benefit	Cost	Benefit-to-Cost	Priority	Funding Partners	Implementation/Lead Agency	Status	Proposed Schedule
Support Virginia Department of Transportation projects that minimize flooding	Flooding	Clear debris and repair banks along roads to prevent backup, erosion and flooding of existing drainage systems	\$1,400,000	N/A	Medium	FEMA, VDEM, VDOT	Local government or VDOT	Ongoing	Ongoing
Seek funding to prepare site-specific hydrologic and hydraulic studies that look at areas that have chronic and repetitive flooding problems	Flooding	Possible determination of solutions to repetitive loss properties.	\$100,000	High	Medium	Local governments	Local governments	Not started; lack of funding	
Identify locations for additional IFLOWS monitoring and additional stream gauges	Flooding / Heavy Rains	Provide better, more timely information to allow faster, more accurate warnings to be issued to the public	\$25,000	High	Medium	VDEM / FEMA / LOCAL GOVT	Local Government	Not started; lack of funding	
Develop and maintain an inventory of flood prone critical facilities	Flooding	Available inventory of critical structures that need additional or unique protection from flooding.	\$1,000	Medium	Medium	FEMA, VDEM	Local government	RC KESSLER MILL RD. FACILITY	PENDING
Develop and maintain damage assessment information	Flooding	Knowledge of hazard caused damage for planning and disaster recovery efforts	Unknown			VDEM	Local government	Not started; lack of funding	
Revise stormwater management and floodplain management ordinances	Flooding	Up to date hazard related ordinances to provide guidance for planning and development	Unknown			Local government, DCR	Local government	PENDING APPROVED BY 2017	
Flood hazard mapping update/modernization	Flooding	Increased accuracy of flood maps and more effective regulation and enforcement of regulations	\$50,000	High	High	FEMA, VDEM	Local government	Ongoing	Ongoing
Citizen Warning and Alert	All hazards	Reduced loss through improved warning system	\$50,000/ \$20,000 annually	High	Medium	FEMA, VDEM, Local Government	CommIT12	Ongoing	Ongoing

Project	Hazard Mitigated	Benefit	Cost	Benefit-to-Cost	Priority	Funding Partners	Implementation/Lead Agency	Status	Proposed Schedule
Communication equipment interoperability	All hazards	Improved coordination among jurisdictions; improved response times	unknown	High	High	FEMA, Local government	FEMA, Local government	Ongoing See Note	Ongoing
Additional hazard related GIS layers/data	All hazards	Increased accuracy of hazard mitigation planning	\$100,000	High	High	USGS, NOAA, FEMA, VDEM, VDOT, VDOF	Local government, Engineering Dept.	Ongoing	Ongoing
Additional hazard field data	Flooding	Elevation certificates for residential, business and critical facilities; increased accuracy of hazard mitigation planning	\$75,000	High	High	FEMA, VDEM, Local government	Local government, Engineering Dept.	Ongoing	Ongoing
Residential and Commercial Structure acquisition	Flooding	Removal of structures from flood hazard areas; reduce repetitive loss; reduce loss of life and property	\$15,000,000	High	High	FEMA, VDEM	Local government, Engineering Dept	Ongoing	Ongoing
Identify funding and resources for delineating landslide hazards	Landslide	Landslide Tool for planning and decision-making; limitation of new development.	\$15,000	Low	Medium	VDEM, DCR	DCR	Completed	Ordinance Covered Hazard
Develop steep slope ordinance/guidelines for development in steep slope/marginal soils areas	Landslide	Landslide Tool for planning and decision-making; limitation of new development.	\$10,000	Medium	Medium	DCR	Local government	Completed	Completed
Public education	All hazards	Inform public about hazards and mitigation options	\$50,000	High	High	FEMA, VDEM, Local government	Local government	Ongoing	Ongoing
Participate in special statewide outreach/awareness activities, such as Winter Weather Awareness Week, Flood Awareness Week, etc	All Hazards	Inform public about hazards and mitigation options	\$10,000	High	High	VDEM, FEMA, NWS	Local government	In progress	Ongoing events
Stormwater facilities construction	Flooding	Reduce frequency and impact of flooding	\$15,000,000	High	High	FEMA, VDEM	Local government, Engineering Dept.	Ongoing	Ongoing

Note:

1. Currently inter-operate with City of Roanoke, Town of Vinton, Western Virginia Regional Jail, Regional Airport, and Virginia Western Comm. College. Within 6 months Franklin County will join the radio system. Also, the County employs multi-band radios for routine communication with other jurisdictions. The County participates in the "Cache Team" radio program and have our local mutual-aid frequencies programmed into the Radio Cache located in Montgomery County.